

REMARKS

The Final Official Action mailed September 16, 2004, and the Advisory Action mailed January 18, 2005, have been received and their contents carefully noted. Filed concurrently herewith is a *Request for Two Month Extension of Time*, which extends the shortened statutory period for response to February 16, 2005. Also, filed concurrently herewith is a *Request for Continued Examination*. Accordingly, the Applicant respectfully submits that this response is being timely filed.

The Applicant notes with appreciation the consideration of the Information Disclosure Statements filed on January 24, 2002, and March 19, 2002. A further Information Disclosure Statement is submitted herewith and consideration of this Information Disclosure Statement is respectfully requested.

Claims 1-36 were pending in the present application prior to the above amendment. Claims 1, 23 and 28 have been amended to better recite the features of the present invention, and new claims 37-39 have been added to recite additional protection to which the Applicant is entitled. Accordingly, claims 1-39 are now pending in the present application, of which claims 1-3, 23 and 28-30 are independent. For the reasons set forth in detail below, all claims are believed to be in condition for allowance. Favorable reconsideration is requested.

The Official Action continues to reject claims 1-36 as obvious based on the combination of U.S. Patent Application Publication No. 2002/0098635 to Zhang et al. and U.S. Patent No. 5,966,596 to Ohtani et al. The Applicant respectfully traverses the rejection because the Official Action has not made a *prima facie* case of obviousness.

As stated in MPEP §§ 2142-2143.01, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim

limitations. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

With respect to independent claims 1, 23 and 28, the prior art, either alone or in combination, does not teach or suggest all the features of the independent claims, as amended. Independent claims 1, 23 and 28 have been amended to recite forming a chemical oxide film on a surface of a semiconductor film comprising silicon by using a liquid chemical. Also, dependent claims 37-39, which depend from claims 1, 23 and 28, respectively, have been added and recite that the chemical oxide film is 5 nm thick or less. Zhang and Ohtani, either alone or in combination, do not teach or suggest at least the above-referenced features of the present invention.

Since Zhang and Ohtani do not teach or suggest all the claim limitations, a *prima facie* case of obviousness cannot be maintained.

With respect to all the independent claims 1-3, 23 and 28-30, there is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify Zhang and Ohtani or to combine reference teachings to achieve the claimed invention.

The Official Action concedes that Zhang does not teach a method of forming protective film 33. The Official Action asserts that it would have been obvious to one of ordinary skill in the art at the time of the invention to use the method of forming a thin oxide film (not shown) in Ohtani in order to form the protective film 33 of Zhang "since

the method of Ohtani is a known method of forming an oxide that improves the surface characteristics of the underlying film" (page 21, Paper No. 20040913). For the reasons noted in detail below, the Applicant respectfully disagrees and traverses the above assertions.

The Advisory Action again asserts that "any known method could be used to form the oxide layer 33 in the absence of a particular suggestion by Zhang et al." (page 2, Paper No. 20050112) and that "it would have been obvious ... to form the oxide layer of Zhang et al. by the method of Ohtani et al., since the method of forming an oxide layer lacks criticality in the invention of Zhang et al., and since the method of Ohtani is a known method of forming an oxide that improves the surface characteristics of the underlying film" (*Id.*, emphasis removed). The Applicants again respectfully disagree. Merely asserting that the method of forming an oxide layer lacks criticality in the invention of Zhang et al., or that Ohtani is a known method of forming an oxide that improves the surface characteristics of the underlying film is not sufficient to instruct one of ordinary skill in the art to use the Ohtani method to form the protective film 33 in Zhang.

The Applicant again respectfully submits that the Official Action has reversed the burden on the Examiner to prove a *prima facie* case of obviousness. The Official Action still has not provided a reason why one of ordinary skill in the art would use a particular method to form the protective film 33 in Zhang. The Official Action cannot simply assert that "any known method could be used to form the oxide layer 33 in the absence of a particular suggestion by Zhang et al." (page 21, Paper No. 22040913). Rather, the rules require that the Examiner find and identify some teaching, suggestion, or motivation to combine the references either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. In the present case, the Examiner must show that there is a teaching, suggestion, or motivation to form the protective film 33 using the method of Ohtani, *i.e.* the Examiner must show why it is obvious to combine these two references and why the surface

characteristics of Zhang are a problem that should (and could) be solved by the method in Ohtani.

As mentioned above, the Official Action asserts that “any known method could be used to form the oxide layer 33” (Id., emphasis added). It is noted that the test for obviousness is not whether the references “could have been” combined or modified as asserted in the Official Action, but rather whether the references should have been. As noted in MPEP § 2143.01, “The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination.” In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990) (emphasis in original). Thus, it is respectfully submitted that the standard set forth in the Official Action is improper to support a finding of *prima facie* obviousness.

It is further noted that the Advisory Action has not addressed the following arguments presented in the previously filed *Response*:

Also, in asserting that it would have been obvious to combine Zhang and Ohtani, the Official Action does not show how the problem allegedly solved by Ohtani has anything to do with Zhang or how either reference has anything to do with the invention defined by the claims of the present application. Specifically, the Official Action relies on a method for the formation of a thin oxide film in Ohtani to cure the deficiencies in Zhang. However, the thin oxide film in Ohtani is provided so that “the amorphous silicon film no longer repels water” (column 2, line 43, or column 7, lines 17), or so that the “silicon film 103 no longer repels aqueous solution” (column 6, lines 59-60). Whereas, in Zhang, the protective film 33 is used in doping processes. Zhang does not appear to be concerned with whether water is repelled or with the surface characteristics of a silicon film. Ohtani does not discuss use of the method of forming a thin oxide film in place of or in addition to a protective film 33 used during a doping process to form a weak p-type polysilicon film 34. As such, it is unclear how or why it would have been obvious to combine the two references.

In the “Response to Arguments” section, the Official Action asserts “that the combination [of Zhang and Ohtani] would not be removing Zhang’s method of providing a protective film of a silicon oxide. Rather, the examiner is [relying] upon Ohtani’s method for showing how to form a silicon oxide protective film, the method having the added benefits of improving surface characteristics” (page 21-22, Paper No. 20040913).


Whether the Official Action is relying on Ohtani to teach a method of forming a thin oxide film in lieu of the protective film 33 in Zhang, or whether the Official Action is relying on Ohtani to teach that the method of forming the thin oxide film in Ohtani should be used to form the protective film 33 in Zhang, the Official Action still has not provided a reason why such combination should take place, which is legally required to form a *prima facie* case of obviousness.

Although the Official Action has shown that protective film 33 exists in Zhang, and, independently and separately, that there is a method of forming a thin oxide film (not shown) in Ohtani, the Official Action has not shown why it would have been obvious to use the method in Ohtani of forming the thin oxide film as (or in lieu of) the method of forming the protective film 33 of Zhang.

For the reasons stated above, the Official Action has not formed a proper *prima facie* case of obviousness. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a) are in order and respectfully requested.

Should the Examiner believe that anything further would be desirable to place this application in better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,



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